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Lake Istokpoga
Highlands County, Florida

(U.S.) National Eutrophication Survey, Corvallis, OR

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NATIONAL EUTROPHICATION SURVEY

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REPORT
ON
LAKE ISTOKPOGA
HIGHLANDS COUNTY
FLORIDA

EPA REGION IV

WORKING PAPER No. 258

WITH THE COOPERATION OF THE

FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

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16. ABSTRACT
Annual total phosphorus and total nitrogen loadings to the lake were estimated and subdivided according to either point or non-point source origin. An assessment of the lake's trophic condition and limiting nutrient is also provided. All data collected by the U.S.E.P.A. National Eutrophication Survey during the one year study of the lake and its tributaries are included in the report.

17. KEY WORDS AND DOCUMENT ANALYSIS

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CONTENTS

	Page
Foreword	ii
List of Florida Lakes	iv
Lake and Drainage Area Map	v
Sections	
I. Conclusions	1
II. Lake and Drainage Basin Characteristics	4
III. Lake Water Quality Summary	5
IV. Nutrient Loadings	10
V. Literature Reviewed	15
VI. Appendices	16

FOREWORD

The National Eutrophication Survey was initiated in 1972 in response to an Administration commitment to investigate the nationwide threat of accelerated eutrophication to freshwater lakes and reservoirs.

OBJECTIVES

The Survey was designed to develop, in conjunction with state environmental agencies, information on nutrient sources, concentrations, and impact on selected freshwater lakes as a basis for formulating comprehensive and coordinated national, regional, and state management practices relating to point-source discharge reduction and non-point source pollution abatement in lake watersheds.

ANALYTIC APPROACH

The mathematical and statistical procedures selected for the Survey's eutrophication analysis are based on related concepts that:

a. A generalized representation or model relating sources, concentrations, and impacts can be constructed.

b. By applying measurements of relevant parameters associated with lake degradation, the generalized model can be transformed into an operational representation of a lake, its drainage basin, and related nutrients.

c. With such a transformation, an assessment of the potential for eutrophication control can be made.

LAKE ANALYSIS

In this report, the first stage of evaluation of lake and watershed data collected from the study lake and its drainage basin is documented. The report is formatted to provide state environmental agencies with specific information for basin planning [§303(e)], water quality criteria/standards review [§303(c)], clean lakes [§314(a,b)], and water quality monitoring [§106 and §305(b)] activities mandated by the Federal Water Pollution Control Act Amendments of 1972.

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Beyond the single lake analysis, broader based correlations between nutrient concentrations (and loading) and trophic condition are being made to advance the rationale and data base for refinement of nutrient water quality criteria for the Nation's fresh water lakes. Likewise, multivariate evaluations for the relationships between land use, nutrient export, and trophic condition, by lake class or use, are being developed to assist in the formulation of planning guidelines and policies by EPA and to augment plans implementation by the states.

ACKNOWLEDGMENT

The staff of the National Eutrophication Survey (Office of Research & Development, U. S. Environmental Protection Agency) expresses sincere appreciation to the Florida Department of Environmental Regulation for professional involvement and to the Florida National Guard for conducting the tributary sampling phase of the Survey.

Joseph W. Landers, Jr., Secretary of the Department of Environmental Regulation; John A Redmond, former Director of the Division of Planning, Technical Assistance, and Grants; and Dr. Tim S. Stuart, Chief of the Bureau of Water Quality, provided invaluable lake documentation and counsel during the survey, reviewed the preliminary reports, and provided critiques most useful in the preparation of this Working Paper series.

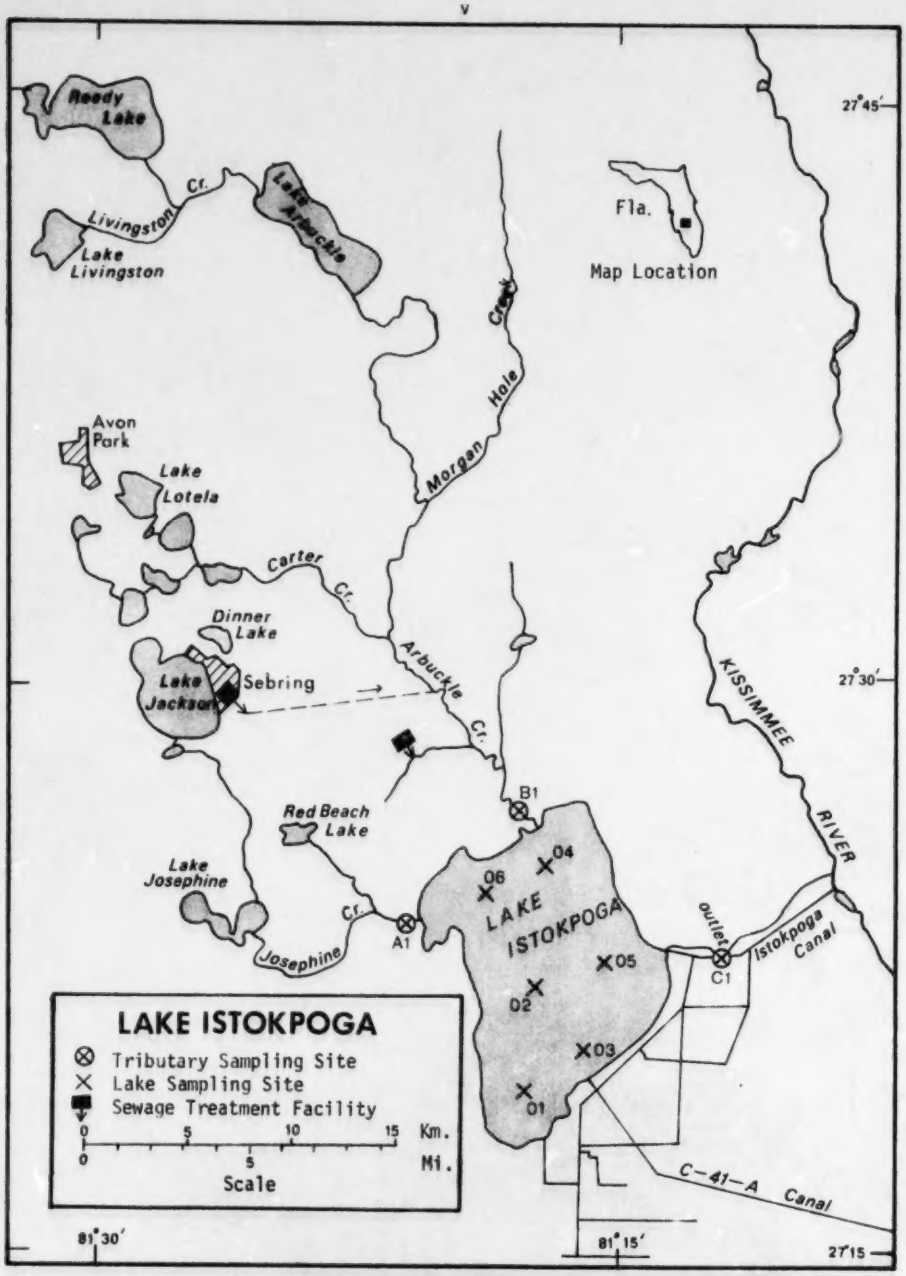
Major General Henry W. McMillan (Retired), then the Adjutant General of Florida, and Project Officer Colonel Hugo F. Windham, who directed the volunteer efforts of the Florida National Guard, are also gratefully acknowledged for their assistance to the Survey.

NATIONAL EUTROPHICATION SURVEY

STUDY LAKES

STATE OF FLORIDA

LAKE NAME	COUNTY
Alligator	Columbia
Apopka	Lake, Orange
Banana	Polk
Crescent	Flagler, Putnam
Doctors	Clay
Dora	Lake
East Tohopekaliga	Osceola
Effie	Polk
Eloise	Polk
George	Putnam, Volusia
Gibson	Polk
Glenada	Highlands
Griffin	Lake
Haines	Polk
Hancock	Polk
Horseshoe	Seminole
Howell	Orange, Seminole
Istokpoga	Highlands
Jessie	Polk
Jessup	Seminole
Kissimmee	Osceola
Lawne	Orange
Lulu	Polk
Marion	Polk
Minnehaha	Orange
Minneola	Lake
Monroe	Seminole, Volusia
Munson	Leon
Okeechobee	Glades, Hendry, Martin, Okeechobee, Palm Beach
Poinsett	Brevard, Orange, Osceola
Reedy	Polk
Seminole	Jackson, FL; Decatur, Seminole, GA
Seminole	Pinellas
South	Brevard
Talquin	Gadsden, Leon
Tarpon	Pinellas
Thonotosassa	Hillsborough
Tohopekaliga	Osceola
Trout	Lake
Weohyakapka	Polk
Yale	Lake


Reedy Lake
Livingston Cr.
Lake Arbuckle
Lake Livingston
Fla.
Map Location
27°45'
Avon Park
Lake Lotela
Morgan Hole Creek
Carter Cr.
Dinner Lake
Lake Jackson
Sebring
Arbuckle Cr.
KISSIMMEE RIVER
27°30'
B1
Red Beach Lake
Lake Josephine
Josephine Cr.
A1
LAKE ISTOKPOGA
outlet
C1
Istokpoga Canal
06
04
05
02
03
01
C-41-A Canal
81°30'
81°15'
27°15'
LAKE ISTOKPOGA
Tributary Sampling Site
Lake Sampling Site
Sewage Treatment Facility
0 5 10 15 Km.
0 5 Mi.
Scale

LAKE ISTOKPOGA

STORET NO. 1221

I. CONCLUSIONS

A. Trophic Condition:

Survey data indicate Lake Istokpoga is meso-eutrophic. It ranked sixth in overall trophic quality when the 41 Florida lakes sampled in 1973 were compared using a combination of six parameters*. Six of the lakes had less median total phosphorus, four had less and one had the same median dissolved phosphorus, nine had less and one had the same median inorganic nitrogen, three had less mean chlorophyll a, and 14 had greater mean Secchi disc transparency.

Survey limnologists observed surface concentrations of algae at stations 4, 5, and 6 in March, and emergent vegetation was noted in the shallow areas at all stations.

B. Rate-Limiting Nutrient:

The results of the algal assays indicate that stations 1, 2, and 3 were phosphorus limited and stations 4, 5, and 6 were nitrogen limited at the time the samples were collected (03/12/73).

The lake data indicate a temporal and spatial combination of limiting nutrients. Generally, those sites nearest the nutrient point sources were nitrogen limited, while the sites further away tended toward phosphorus limitation.

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* See Appendix A.

C. Nutrient Controllability:

1. Point sources--It is estimated that point sources, including septic tanks, contributed 7.6% of the total phosphorus and 1.1% of the total nitrogen inputs to Lake Istokpoga during the Survey sampling year. However, following termination of sampling, the effluent of the Sebring city wastewater treatment plant was diverted to seepage-evaporation pond and no longer impacts the lake.

The sampling year phosphorus loading of 0.30 g/m^2 is equivalent to that proposed by Vollenweider (Vollenweider and Dillon, 1974) as a mesotrophic loading. However, the trophic condition of the lake and unquantifiable "non-point" sources (see below) indicate the loading may have been underestimated, particularly since Florida lakes may assimilate phosphorus at higher levels than those suggested by Vollenweider (see page 14).

2. Non-point sources--It is estimated that non-point sources contributed 92.4% of the total phosphorus and 98.9% of the total nitrogen loads to the lake during the sampling year.

Truck farming, citrus production, and cattle ranching are major agricultural land uses in the Arbuckle Creek drainage, but the relatively low nutrient exports of the stream (page 13) indicate minimal nutrient impact by those activities during the sampling year. However, precipitation was well below normal during the year; but in years of normal or above normal rainfall, those sources may contribute significant amounts of nutrients to the lake.

Two probable but unquantified sources of nutrients are the muck and upland dewatering discharges to the lake during the construction of the large Spring Lake subdivision on the northern shores of Lake Istokpoga and the extensive and expanding muck farm operations along the southern shore (Stuart, 1976).

II. LAKE AND DRAINAGE BASIN CHARACTERISTICS†

A. Morphometry††:

1. Surface area: 112.07 kilometers^2.
2. Mean depth: 1.8 meters.
3. Maximum depth: 2.7 meters.
4. Volume: 201.726 x 10^6 m^3.
5. Mean hydraulic retention time: 155 days (based on outlet flow).

B. Tributary and Outlet:
(See Appendix C for flow data)

1. Tributaries -

Name	Drainage area (km^2)*	Mean flow (m^3/sec)*
Josephine Creek	370.4	3.52
Arbuckle Creek	981.6	10.39
Minor tributaries & immediate drainage -	108.0	1.12
Totals	1,460.0	15.03

2. Outlet -

Istokpoga Canal (C-1)	0.0	1.37
Canal C-41-A, overflow at R.R., seepage	1,572.1	13.66
Total	1,572.1**	15.03**

C. Precipitation***:

1. Year of sampling: 126.9 centimeters.
2. Mean annual: 143.5 centimeters.

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† Table of metric conversions--Appendix B.

†† No bathymetric maps available. Surface area from FL Game & Freshwater Fish Comm. (Anonymous, 1972); depths estimated from soundings reported in Appendix D.

* For limits of accuracy, see Working Paper No. 175, "...Survey Methods, 1973-1976".

** Includes area of lake; outflow adjusted to equal sum of inflows.

*** See Working Paper No. 175.

III. WATER QUALITY SUMMARY

Lake Istokpoga was sampled three times in 1973 by means of a pontoon-equipped Huey helicopter. Each time, samples for physical and chemical parameters were collected from six stations on the lake and from one or more depths at each station (see map, page v). During each visit, a single depth-integrated (near bottom to surface) sample was composited from the stations for phytoplankton identification and enumeration; and during the first visit, two 18.9-liter depth-integrated samples were composited for algal assays (stations 1, 2, and 3 were combined in one sample; and stations 4, 5, and 6 were combined in the other). Also each time, a depth-integrated sample was collected from each of the stations for chlorophyll a analysis. The maximum depth sampled was 1.5 meters at all stations except station 4 (1.2 meters).

The sampling results are presented in full in Appendix D and are summarized in the following table.

A. SUMMARY OF PHYSICAL AND CHEMICAL CHARACTERISTICS FOR LAKE ISTOKPOGA
STORET CODE 1221

PARAMETER	1ST SAMPLING (3/12/73) 6 SITES RANGE	MEAN	MEDIAN	2ND SAMPLING (9/ 4/73) 6 SITES RANGE	MEAN	MEDIAN	3RD SAMPLING (11/ 6/73) 6 SITES RANGE	MEAN	MEDIAN
TEMP (C)	25.2 - 28.1	26.2	26.0	29.4 - 30.0	29.7	29.6	24.7 - 25.6	25.0	24.8
DISS OXY (MG/L)	7.4 - 8.9	7.9	7.7	6.4 - 7.6	7.1	7.2	7.4 - 8.0	7.5	7.4
CNDCTVY (MCROMO)	120. - 140.	132.	130.	100. - 130.	114.	113.	91. - 100.	96.	97.
PH (STAND UNITS)	7.2 - 9.0	7.9	7.8	7.0 - 8.6	7.6	7.3	6.5 - 7.2	6.8	6.8
TOT ALK (MG/L)	10. - 10.	10.	10.	10. - 11.	10.	10.	10. - 11.	10.	10.
TOT P (MG/L)	0.020 - 0.091	0.037	0.032	0.030 - 0.051	0.038	0.037	0.053 - 0.066	0.057	0.056
ORTHO P (MG/L)	0.003 - 0.054	0.013	0.006	0.008 - 0.024	0.014	0.013	0.010 - 0.024	0.015	0.012
NO2+NO3 (MG/L)	0.040 - 0.100	0.063	0.060	0.060 - 0.100	0.085	0.090	0.030 - 0.110	0.060	0.060
AMMONIA (MG/L)	0.040 - 0.070	0.053	0.055	0.070 - 0.120	0.095	0.095	0.040 - 0.060	0.056	0.060
KJEL N (MG/L)	0.700 - 1.300	0.875	0.850	1.300 - 1.600	1.450	1.400	0.900 - 1.300	1.089	1.100
INORG N (MG/L)	0.080 - 0.160	0.117	0.105	0.130 - 0.220	0.180	0.180	0.080 - 0.170	0.116	0.110
TOTAL N (MG/L)	0.740 - 1.350	0.938	0.910	1.400 - 1.700	1.535	1.475	0.990 - 1.370	1.149	1.150
CHLRPYL A (UG/L)	2.4 - 6.0	4.8	5.4	8.7 - 14.5	11.4	11.6	2.4 - 5.9	3.6	3.3
SECCHI (METERS)	0.6 - 1.9	1.5	1.6	0.5 - 0.9	0.7	0.7	0.5 - 0.8	0.5	0.5

B. Biological characteristics:

1. Phytoplankton -

Sampling Date	Dominant Genera	Algal units per ml
03/12/73	1. Chroococcus sp.	1,596
	2. Flagellates	678
	3. Dinobryon sp.	632
	4. Synedra sp.	196
	5. Lyngbya sp.	166
	Other genera	753
	Total	4,021
09/04/73	1. Lyngbya sp.	4,427
	2. Microcystis sp.	4,427
	3. Aphanocapsa sp.	962
	4. Melosira sp.	770
	5. Pennate diatoms	670
	Other genera	5,039
	Total	16,295
11/06/73	1. Microcystis sp.	2,618
	2. Melosira sp.	2,310
	3. Flagellates	693
	4. Spermatozoopsis sp.	539
	5. Merismopedia sp.	539
	Other genera	3,234
	Total	9,933

2. Chlorophyll a -

Sampling Date	Station Number	Chlorophyll a (µg/l)
03/12/73	1	5.5
	2	5.3
	3	2.4
	4	6.0
	5	4.1
	6	5.6

Sampling Date	Station Number	Chlorophyll a (µg/l)
09/04/73	1	11.2
	2	13.0
	3	8.7
	4	8.7
	5	12.1
	6	14.5
11/06/73	1	3.5
	2	3.2
	3	2.7
	4	2.4
	5	5.9
	6	3.9

C. Limiting Nutrient Study:

1. Filtered and nutrient spiked -

a. Stations 1, 2, and 3 -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.012	0.172	0.6
0.050	0.062	0.172	3.2
0.050 P + 1.0 N	0.062	1.172	15.2
1.0 N	0.012	1.172	0.4

b. Stations 4, 5, and 6 -

Spike (mg/l)	Ortho P Conc. (mg/l)	Inorganic N Conc. (mg/l)	Maximum yield (mg/l-dry wt.)
Control	0.016	0.120	2.8
0.050	0.066	0.120	3.3
0.050 P + 1.0 N	0.066	1.120	20.9
1.0 N	0.016	1.120	4.6

2. Discussion -

The control yields of the assay alga, Selenastrum capricornutum, indicate that the potential primary productivity of Lake Istokpoga was moderately high at the time the samples

were collected (03/12/73).

The results of the assay of the combined sample from stations 1, 2, and 3 indicate phosphorus limitation, but the results of the assay of the combined sample from stations 4, 5, and 6 indicate limitation by nitrogen.

The lake data indicate a temporal and spatial combination of limiting nutrients, although it will be noted that the stations nearest the nutrient point sources tended toward nitrogen limitation while the stations further away tended toward phosphorus limitation.

Following is a tabulation of the mean inorganic nitrogen/orthophosphorus ratios for each of the sampling stations and times with the indicated limiting nutrient in parentheses.

Station	03/12/73	09/04/73	11/06/73
1	24/1 (P)	13/1 (N?)	6/1 (N)
2	15/1 (P)	26/1 (P)	10/1 (N)
3	22/1 (P)	24/1 (P)	6/1 (N)
4	3/1 (N)	7/1 (N)	7/1 (N)
5	17/1 (P)	13/1 (N?)	4/1 (N)
6	18/1 (P)	9/1 (N)	12/1 (N)

IV. NUTRIENT LOADINGS
(See Appendix E for data)

For the determination of nutrient loadings, the Florida National Guard collected monthly near-surface grab samples from each of the tributary sites indicated on the map (page v). Sampling was begun in March, 1973, and was completed in February, 1974.

Through an interagency agreement, stream flow estimates for the year of sampling and a "normalized" or average year were provided by the Florida District Office of the U.S. Geological Survey for the tributary sites nearest the lake. Flow out of the lake was determined to occur at Istokpoga Canal, Drainage Canal C-41-A, seepage at the dike, and overflow at the railroad (Anderson, 1974).

The total outflow from Lake Istokpoga was calculated in the following way: first, the total outflow was assumed to equal the total inflow; second, the flow at station C-1 (1.37 m^3/sec) was subtracted from the total outflow (15.03 m^3/sec); and third, the remainder (13.66 m^3/sec) was attributed to Canal C-41-A, overflow at the railroad, and seepage at the dike.

In this report, nutrient loads for Arbuckle Creek (station B-1) were determined by using a modification of a U.S. Geological Survey computer program for calculating stream loadings*. Nutrient loads shown are those measured minus point-source loads, if any.

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* See Working Paper No. 175.

Josephine Creek (station A-1) was not sampled because the site was inaccessible. Nutrient loads for this stream were computed using the nutrient loads, in kg/km^2/yr, at station B-1 and multiplying by the A-1 drainage area in km^2.

Nutrient loads for station C-1 were estimated using the mean stream concentrations (12 samples) and the mean annual flow.

Nutrient loads for the drainage Canal C-41-A, overflow, and seepage were estimated using the mean concentrations of all lake sampling stations (i.e., the means of 27 data points through time and depth) and multiplying the means by the mean annual outflow.

Nutrient loads for unsampled "minor tributaries and immediate drainage" ("ZZ" of U.S.G.S.) were estimated using the nutrient loads, in kg/km^2/yr, at station B-1 and multiplying by the ZZ area in km^2.

During the Survey sampling year, the operators of the Sebring Airport and the City of Sebring wastewater treatment plants provided monthly effluent samples and corresponding flow data. However, the City of Sebring wastewater treatment plant no longer discharges to Arbuckle Creek (Stuart, 1976).

A. Waste Sources:

1. Known municipal -

Name	Pop. Served	Treatment	Mean Flow (m^3/d)	Receiving Water
Sebring Airport	450*	tr. filter + pond	260.7	Arbuckle Creek
City of Sebring	6,000**	act. sludge + pond	738.8	Arbuckle Creek

2. Known industrial - None

* Treatment plant questionnaire; includes pretreated tannery waste.
** Parker, 1975.

B. Annual Total Phosphorus Loading - Average Year:

1. Inputs -

Source	kg P/ yr		% of total
a. Tributaries (non-point load) -			
Josephine Creek	6,665		19.8
Arbuckle Creek	17,510		52.1
b. Minor tributaries & immediate drainage (non-point load) -	1,945		5.8
c. Known municipal STP's -			
Sebring Airport	35		0.1
City of Sebring	2,485		7.4
d. Septic tanks* -	45		0.1
e. Known industrial - None	-		-
f. Direct precipitation** -	4,930		14.7
Total	33,615		100.0

2. Outputs -

Istokpoga Canal	6,005	} 25,570
Overflow, seepage, Canal C-41-A	19,565	

3. Net annual P accumulation - 8,045 kg.

* Estimate based on 153 lakeshore dwellings; see Working Paper No. 175.
** Brezonik and Shannon, 1971.

C. Annual Total Nitrogen Loading - Average Year:

1. Inputs -

Source	kg N/yr	% of total
a. Tributaries (non-point load) -		
Josephine Creek	132,975	22.3
Arbuckle Creek	352,090	59.1
b. Minor tributaries & immediate drainage (non-point load) -	38,770	6.5
c. Known municipal STP's -		
Sebring Airport	1,550	0.3
City of Sebring	3,365	0.6
d. Septic tanks* -	1,630	0.3
e. Known industrial - None	-	-
f. Direct precipitation** -	65,000	10.9
Total	595,380	100.0

2. Outputs -

Istokpoga Canal	60,220	} 567,575
Overflow, seepage, Canal C-41-A	507,355	

3. Net annual N accumulation - 27,805 kg.

D. Non-point Nutrient Export by Subdrainage Area:

Tributary	kg P/km^2/yr	kg N/km^2/yr
Arbuckle Creek	18	359

* Estimate based on 153 lakeshore dwellings; see Working Paper No. 175.
** Brezonik and Shannon, 1971.

E. Yearly Loads:

In the following table, the existing phosphorus loadings are compared to those proposed by Vollenweider (Vollenweider and Dillon, 1974). Note, however, that Florida lakes may be able to assimilate phosphorus at a somewhat higher level than that suggested by Vollenweider (Shannon and Brezonik, 1972).

Essentially, Vollenweider's "dangerous" loading is one at which the receiving water would become eutrophic or remain eutrophic; his "permissible" loading is that which would result in the receiving water remaining oligotrophic or becoming oligotrophic if morphometry permitted. A mesotrophic loading would be considered one between "dangerous" and "permissible".

Vollenweider's model may not be applicable to water bodies with short hydraulic retention times.

	Total Phosphorus		Total Nitrogen	
	Total	Accumulated	Total	Accumulated
grams/m^2/yr	0.30	0.07	5.3	0.2

Vollenweider phosphorus loadings ($g/m^2/yr$) based on estimated mean depth and hydraulic retention time of Lake Istokpoga:

"Dangerous" (eutrophic loading)	0.40
"Permissible" (oligotrophic loading)	0.20

V. LITERATURE REVIEWED

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VI. APPENDICES

APPENDIX A

LAKE RANKINGS

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
1201	ALLIGATOR LAKE	0.620	0.260	474.000	87.733	13.100	0.386
1202	LAKE APOPKA	0.102	0.230	484.176	46.611	8.200	0.019
1203	LAKE BANANA	0.660	0.260	482.667	208.600	3.600	0.293
1206	LAKE CRESCENT	0.065	0.130	473.889	10.211	10.200	0.033
1207	DOCTORS LAKE	0.084	0.120	465.555	27.100	10.600	0.028
1208	LAKE DORA	0.102	0.240	482.889	59.978	7.400	0.022
1209	LAKE EFFIE	1.480	0.410	489.000	261.433	15.000	0.950
1210	LAKE GEORGE	0.129	0.165	469.308	35.000	11.000	0.063
1211	LAKE GIBSON	0.167	0.115	470.000	19.675	10.200	0.069
1212	GLENADA LAKE	0.134	0.165	454.167	27.667	14.700	0.072
1214	LAKE GRIFFIN	0.119	0.260	481.333	66.855	6.600	0.038
1215	LAKE HAINES	0.063	0.115	462.667	26.567	10.600	0.014
1217	LAKE HANCOCK	0.772	0.195	483.500	97.900	5.600	0.158
1219	LAKE HORSESHOE	0.034	0.130	459.000	12.067	11.500	0.023
1220	LAKE HOWELL	1.260	0.285	464.000	54.117	9.000	1.175
1221	LAKE ISTOKPOGA	0.039	0.120	464.222	6.594	8.600	0.010
1223	LAKE JESSUP	0.492	0.290	487.000	76.550	7.600	0.288
1224	LAKE KISSIMMEE	0.034	0.145	463.667	24.142	8.800	0.007
1227	LAKE LIULU	1.490	1.065	483.000	276.566	14.300	1.030
1228	LAKE MARION	0.044	0.260	468.833	29.967	7.600	0.016
1229	LAKE MINNEHAHA	0.038	0.080	435.000	8.733	7.700	0.012
1230	LAKE MINNEOLA	0.018	0.070	406.333	3.333	7.400	0.009
1231	LAKE MONROE	0.188	0.300	474.555	14.225	10.800	0.128
1232	LAKE OKEECHOBEE	0.063	0.185	472.366	14.524	9.800	0.010
1234	LAKE POINSETT	0.085	0.150	469.000	6.500	10.600	0.051
1236	LAKE REEDY	0.033	0.330	468.500	34.837	10.600	0.008
1238	LAKE SOUTH	0.074	0.130	464.000	23.167	9.000	0.028
1239	LAKE TALQUIN	0.085	0.290	462.167	9.483	14.400	0.031

LAKE DATA TO BE USED IN RANKINGS

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	SDD-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P
1240	LAKE THONOTOSASSA	0.695	0.095	466.167	37.700	10.200	0.565
1241	LAKE TOHOPEKALIGA	0.246	0.200	472.917	38.633	10.500	0.152
1242	TROUT LAKE	1.110	0.650	472.000	76.967	12.900	0.970
1243	LAKE WEOHYAKAPKA	0.047	0.080	458.667	7.767	8.200	0.011
1246	LAKE YALE	0.027	0.160	441.000	25.367	7.600	0.014
1247	LAKE MUNSON	1.475	0.925	486.667	140.317	12.200	0.852
1248	LAKE SEMINOLE	0.234	0.175	473.833	102.000	8.600	0.026
1249	LAKE LAWNE	2.560	1.350	494.667	84.900	10.400	0.117
1250	LAKE TARPON	0.041	0.070	488.889	6.867	9.000	0.027
1252	LAKE ELOISE	0.486	0.170	465.333	70.233	12.200	0.339
1258	LAKE JESSIE	0.051	0.090	452.667	26.300	10.800	0.011
1261	EAST LAKE TOHOPEKALIGA	0.042	0.070	440.833	5.167	9.400	0.007
1264	PAYNE'S PRAIRIE LAKE (NO	1.260	0.140	476.000	88.200	7.400	1.210

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NU
1201	ALLIGATOR LAKE	25 (10)	29 (10)	30 (12)	18 (7)	10 (4)	18 (7)	130
1202	LAKE APOPKA	50 (20)	38 (15)	10 (4)	38 (15)	74 (29)	70 (28)	280
1203	LAKE BANANA	23 (9)	29 (10)	20 (8)	5 (2)	100 (40)	23 (9)	200
1206	LAKE CRESCENT	65 (26)	70 (27)	33 (13)	80 (32)	48 (18)	50 (20)	346
1207	DOCTORS LAKE	60 (24)	76 (30)	60 (24)	55 (22)	34 (12)	56 (22)	341
1208	LAKE DORA	53 (21)	35 (14)	18 (7)	33 (13)	90 (35)	68 (27)	297
1209	LAKE EFFIE	5 (2)	10 (4)	3 (1)	3 (1)	0 (0)	10 (4)	31
1210	LAKE GEORGE	45 (18)	54 (21)	48 (19)	43 (17)	23 (9)	43 (17)	256
1211	LAKE GIBSON	40 (16)	81 (32)	45 (18)	70 (28)	48 (18)	40 (16)	324
1212	GLENADA LAKE	43 (17)	54 (21)	85 (34)	53 (21)	3 (1)	38 (15)	276
1214	LAKE GRIFFIN	48 (19)	29 (10)	23 (9)	30 (12)	95 (38)	48 (19)	273
1215	LAKE HAINES	70 (28)	81 (32)	75 (30)	58 (23)	34 (12)	78 (31)	396
1217	LAKE HANCOCK	18 (7)	43 (17)	13 (5)	13 (5)	98 (39)	28 (11)	213
1219	LAKE HORSESHOE	93 (37)	70 (27)	80 (32)	78 (31)	20 (8)	65 (26)	406
1220	LAKE HOWELL	11 (4)	23 (9)	69 (27)	35 (14)	60 (23)	3 (1)	201
1221	LAKE ISTOKPOGA	85 (34)	76 (30)	65 (26)	93 (37)	69 (27)	89 (35)	477
1223	LAKE JESSUP	28 (11)	18 (7)	5 (2)	25 (10)	83 (32)	25 (10)	184
1224	LAKE KISSIMMEE	90 (36)	63 (25)	73 (29)	65 (26)	65 (26)	99 (39)	455
1227	LAKE LULU	3 (1)	3 (1)	15 (6)	0 (0)	8 (3)	5 (2)	34
1228	LAKE MARION	78 (31)	29 (10)	53 (21)	50 (20)	83 (32)	73 (29)	366
1229	LAKE MINNEHAHA	88 (35)	91 (36)	95 (38)	85 (34)	78 (31)	80 (32)	517
1230	LAKE MINNEOLA	100 (40)	98 (38)	98 (39)	100 (40)	90 (35)	93 (37)	579
1231	LAKE MONROE	38 (15)	15 (6)	28 (11)	75 (30)	26 (10)	33 (13)	215
1232	LAKE OKEECHOBEE	68 (27)	45 (18)	40 (16)	73 (29)	53 (21)	89 (35)	368
1234	LAKE POINSETT	58 (23)	60 (24)	50 (20)	95 (38)	34 (12)	45 (18)	342
1236	LAKE REEDY	95 (38)	13 (5)	55 (22)	45 (18)	34 (12)	95 (38)	337
1238	LAKE SOUTH	63 (25)	70 (27)	69 (27)	68 (27)	60 (23)	56 (22)	386
1239	LAKE TALQUIN	55 (22)	20 (8)	78 (31)	83 (33)	5 (2)	53 (21)	294

PERCENT OF LAKES WITH HIGHER VALUES (NUMBER OF LAKES WITH HIGHER VALUES)

LAKE CODE	LAKE NAME	MEDIAN TOTAL P	MEDIAN INORG N	500-MEAN SEC	MEAN CHLORA	15-MIN DO	MEDIAN DISS ORTHO P	INDEX NO
1240	LAKE THONOTOSASSA	20 (8)	85 (34)	58 (23)	40 (16)	48 (18)	15 (6)	266
1241	LAKE TOHOPEKALIGA	33 (13)	40 (16)	38 (15)	48 (19)	40 (16)	30 (12)	229
1242	TROUT LAKE	15 (6)	8 (3)	43 (17)	23 (9)	13 (5)	8 (3)	110
1243	LAKE WEOHYAKAPKA	75 (30)	91 (36)	83 (33)	88 (35)	74 (29)	84 (33)	495
1246	LAKE YALE	98 (39)	58 (23)	90 (36)	63 (25)	83 (32)	75 (30)	467
1247	LAKE MUNSON	8 (3)	5 (2)	8 (3)	8 (3)	16 (6)	13 (5)	58
1248	LAKE SEMINOLE	35 (14)	48 (19)	35 (14)	10 (4)	69 (27)	63 (25)	260
1249	LAKE LAWNE	0 (0)	0 (0)	0 (0)	20 (8)	43 (17)	35 (14)	98
1250	LAKE TARPON	83 (33)	98 (38)	100 (40)	90 (36)	60 (23)	60 (24)	491
1252	LAKE ELOISE	30 (12)	50 (20)	63 (25)	28 (11)	16 (6)	20 (8)	207
1258	LAKE JESSIE	73 (29)	88 (35)	88 (35)	60 (24)	26 (10)	84 (33)	419
1261	EAST LAKE TOHOPEKALIGA	80 (32)	98 (38)	93 (37)	98 (39)	55 (22)	99 (39)	523
1264	PAYNE'S PRAIRIE LAKE (NO	11 (4)	65 (26)	25 (10)	15 (6)	90 (35)	0 (0)	206

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
1	1230	LAKE MINNEOLA	579
2	1261	EAST LAKE TOHOPEKALIGA	523
3	1229	LAKE MINNEHAHA	517
4	1243	LAKE WEOHYAKAPKA	495
5	1250	LAKE TARPON	491
6	1221	LAKE ISTOKPOGA	477
7	1246	LAKE YALE	467
8	1224	LAKE KISSIMMEE	455
9	1258	LAKE JESSIE	419
10	1219	LAKE HORSESHOE	406
11	1215	LAKE HAINES	396
12	1238	LAKE SOUTH	386
13	1232	LAKE OKEECHOBEE	368
14	1228	LAKE MARION	366
15	1206	LAKE CRESCENT	346
16	1234	LAKE POINSETT	342
17	1207	DOCTORS LAKE	341
18	1236	LAKE REEDY	337
19	1211	LAKE GIBSON	324
20	1208	LAKE DORA	297
21	1239	LAKE TALQUIN	294
22	1202	LAKE APOPKA	280
23	1212	GLENADA LAKE	276
24	1214	LAKE GRIFFIN	273
25	1240	LAKE THONOTOSASSA	266
26	1248	LAKE SEMINOLE	260
27	1210	LAKE GEORGE	256
28	1241	LAKE TOHOPEKALIGA	229

LAKES RANKED BY INDEX NOS.

RANK	LAKE CODE	LAKE NAME	INDEX NO
29	1231	LAKE MONROE	215
30	1217	LAKE HANCOCK	213
31	1252	LAKE ELOISE	207
32	1264	PAYNE'S PRAIRIE LAKE (NO	206
33	1220	LAKE HOWELL	201
34	1203	LAKE BANANA	200
35	1223	LAKE JESSUP	184
36	1201	ALLIGATOR LAKE	130
37	1242	TROUT LAKE	110
38	1249	LAKE LAWNE	98
39	1247	LAKE MUNSON	58
40	1227	LAKE LULU	34
41	1209	LAKE EFFIE	31

APPENDIX B

CONVERSION FACTORS

CONVERSION FACTORS

Hectares x 2.471 = acres

Kilometers x 0.6214 = miles.

Meters x 3.281 = feet

Cubic meters x 8.107×10^{-4} = acre/feet

Square kilometers x 0.3861 = square miles

Cubic meters/sec x 35.315 - cubic feet/sec

Centimeters x 0.3937 = inches

Kilograms x 2.205 = pounds

Kilograms/square kilometer x 5.711 = lbs/square mile

APPENDIX C

TRIBUTARY FLOW DATA

TRIBUTARY FLOW INFORMATION FOR FLORIDA 8/25/75

LAKE CODE 1221 LAKE ISTOKPOGA

TOTAL DRAINAGE AREA OF LAKE(SQ KM) 1572.1

TRIBUTARY	SUB-DRAINAGE AREA(SQ KM)	NORMALIZED FLOWS(CMS) JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	MEAN
1221A1	370.4	2.04	2.04	2.27	1.81	1.08	2.49	3.91	5.69	8.10	7.11	3.43	2.24	3.52
1221B1	981.6	5.52	5.69	7.39	5.52	3.54	8.69	11.04	15.29	23.36	23.42	8.98	5.97	10.39
1221C1	0.0	0.91	1.81	1.78	0.68	0.65	0.54	0.74	1.78	3.88	2.18	0.91	0.59	1.37
1221XX	1572.1	8.92	9.60	10.02	9.77	7.65	10.14	15.01	19.26	29.79	32.22	21.38	11.81	15.49
1221ZZ	108.8	0.59	0.62	0.76	0.59	0.37	0.91	1.19	1.70	2.52	2.46	0.99	0.68	1.12

SUMMARY

TOTAL DRAINAGE AREA OF LAKE = 1572.1
SUM OF SUB-DRAINAGE AREAS = 1460.8
TOTAL FLOW IN = 196.46
TOTAL FLOW OUT = 185.56

NOTE *** XX(OUTFLOW)=ISTOKPOGA CANAL, CANAL 41A, OVERFLOW AT RR, SEEPAGE THRU DIK

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
1221**	3	73	19.09	18	19.11				
	4	73	12.94	13	12.97				
	5	73	9.83	17	12.74				
	6	73	1.47	14	1.44				
	7	73	7.14	13	0.0				
	8	73	18.89	17	11.21				
	9	73	35.25	14	48.14				
	10	73	10.14	12	16.42				
	11	73	2.49	16	7.87				
	12	73	2.29	14	0.74				
	1	74	2.52	17	1.70				
	2	74	1.98	14	4.25				
1221A1	3	73	1.93	18	3.23				
	4	73	1.13	13	1.73				
	5	73	0.57	17	0.62				
	6	73	1.36	14	1.30				
	7	73	1.36	13	1.76				
	8	73	1.98	17	1.87				
	9	73	5.83	14	6.71				
	10	73	1.98	12	2.49				
	11	73	0.88	16	0.79				
	12	73	0.59	14	0.48				
	1	74	0.34						
	2	74	0.37	14	0.23				

TRIBUTARY FLOW INFORMATION FOR FLORIDA 8/25/75

LAKE CODE 1221 LAKE ISTOKPOGA

MEAN MONTHLY FLOWS AND DAILY FLOWS(CMS)

TRIBUTARY	MONTH	YEAR	MEAN FLOW	DAY	FLOW	DAY	FLOW	DAY	FLOW
122181	3	73	7.16	18	6.51				
	4	73	9.74	13	16.14				
	5	73	6.34	17	7.22				
	6	73	3.68	14	2.66				
	7	73	8.33	13	5.52				
	8	73	21.12	17	18.01				
	9	73	27.35	14	30.87				
	10	73	15.63	12	16.68				
	11	73	4.79	16	4.56				
	12	73	2.58	14	2.63				
	1	74	2.27	17	1.84				
	2	74	2.04	14	1.87				
122122	3	73	0.74	18	0.79				
	4	73	0.88	13	1.44				
	5	73	0.57	17	0.62				
	6	73	0.40	14	0.31				
	7	73	0.79	13	0.59				
	8	73	1.87	17	1.59				
	9	73	2.66	14	3.03				
	10	73	1.42	12	1.53				
	11	73	0.45	16	0.42				
	12	73	0.25	14	0.25				
	1	74	0.20	17	0.17				
	2	74	0.20	14	0.17				

APPENDIX D

PHYSICAL and CHEMICAL DATA

STORET RETRIEVAL DATE 75/08/25

122101
27 19 04.0 081 17 40.0
LAKE ISTOKPOGA
12055 FLORIDA

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/10	17 00	0000	25.6		25	135	7.20	10K	0.070	0.900	0.070	0.007
	17 00	0005	25.6	8.9		120	7.30	10K	0.070	0.900	0.080	0.005
73/09/04	14 20	0000	29.5	7.6	37	130	8.60	11	0.120	1.600	0.100	0.017
73/11/06	14 05	0000	25.6		20	99	7.20	11	0.060	1.200	0.030	0.015
	14 05	0004	25.5	7.6		99	7.20	11	0.040	1.000	0.040	0.012

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/10	17 00	0000	0.035	5.5
	17 00	0005	0.033	
73/09/04	14 20	0000	0.040	11.2
73/11/06	14 05	0000	0.053	3.5
	14 05	0004	0.056	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

122102
27 21 54.0 081 17 00.0
LAKE ISTOKPOGA
12055 FLORIDA

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/12	10 30	0000	25.2									
	10 30	0005	25.2	7.7	55	120	9.00	10K	0.060	1.300	0.050	0.009
73/09/04	14 45	0000	30.0	7.2		130	8.60	10K	0.040	0.700	0.060	0.005
73/11/06	14 20	0000	24.8		30	114	8.10	10K	0.110	1.600	0.100	0.008
	14 20	0005	24.7	7.4	18	97	6.80	10K	0.060	1.100	0.050	0.011
						97	6.80	10K	0.050	1.000	0.060	0.010

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/12	10 30	0000	0.033	5.3
	10 30	0005	0.025	
73/09/04	14 45	0000	0.036	13.0
73/11/06	14 20	0000	0.056	3.2
	14 20	0005	0.055	

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

122103
27 20 19.0 081 15 52.0
LAKE ISTOKPOGA
12055 FLORIDA

11EPALES
3

2111202
0008 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/12	10 50	0000	26.5		72	130	8.30	10K	0.050	0.800	0.050	0.006
	10 50	0005	25.8	7.4		130	8.20	10K	0.040	0.700	0.060	0.003
73/09/04	14 35	0000	29.4	7.2	34	127	7.60	10	0.090	1.300	0.100	0.008
73/11/06	14 15	0000	24.9	7.4	20	98	6.70	10K	0.050	1.100	0.060	0.017

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/12	10 50	0000	0.023	2.4
	10 50	0005	0.020	
73/09/04	14 35	0000	0.035	8.7
73/11/06	14 15	0000	0.054	2.7

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/60/23

122104
27 25 35.0 081 18 27.0
LAKE ISTOKPOGA
12055 FLORIDA

11EPALES
3

2111202
0006 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/12	11 20	0000	26.3		72	140	8.00	10K	0.060	1.000	0.090	0.043
	11 20	0004	25.9	7.6		140	7.90	10K	0.060	0.700	0.100	0.054
73/09/04	15 10	0000	29.7	6.4	18	100	7.00	10K	0.080	1.400	0.080	0.024
73/11/06	16 00	0000	24.7	7.4	30	100	6.80	10K	0.060	0.900	0.110	0.024

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/12	11 20	0000	0.073	6.0
	11 20	0004	0.091	
73/09/04	15 10	0000	0.051	8.7
73/11/06	16 00	0000	0.054	2.4

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

122105
27 22 50.0 081 14 38.0
LAKE ISTOKPOGA
12055 FLORIDA

11EPALES
3

2111202
0007 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/12	12 00	0000	28.1		76	130	7.80	10K	0.040	0.800	0.050	0.006
	12 00	0005	26.8	8.1		140	7.70	10K	0.040	0.700	0.040	0.004
73/09/04	15 20	0000	29.5	7.0	25	103	7.00	10K	0.070	1.400	0.060	0.010
73/11/06	16 05	0000	25.2	8.0	20	91	6.60	10K	0.060	1.300	0.030	0.024

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/12	12 00	0000	0.026	4.1
	12 00	0005	0.021	
73/09/04	15 20	0000	0.039	12.1
73/11/06	16 05	0000	0.066	5.9

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

122106
27 24 21.0 081 19 18.0
LAKE ISTOKPOGA
12055 FLORIDA

11EPALES
3

2111202
0009 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00010 WATER TEMP CENT	00300 DO MG/L	00077 TRANSP SECCHI INCHES	00094 CNDUCTVY FIELD MICROMHO	00400 PH SU	00410 T ALK CACO3 MG/L	00610 NH3-N TOTAL MG/L	00625 TOT KJEL N MG/L	00630 NO2&NO3 N-TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P
73/03/12	12 15	0000	26.9		54	130	7.70	10K	0.060	1.000	0.060	0.007
	12 15	0004	26.1	7.8		140	7.60	10K	0.050	1.000	0.050	0.005
73/09/04	15 00	0000	30.0	7.4	18	111	7.10	10	0.100	1.400	0.070	0.019
73/11/06	15 45	0000	24.8		20	93	6.50	10K	0.060	1.300	0.070	0.012
	15 45	0005	24.8	7.4		92	6.50	10K	0.060	0.900	0.090	0.012

DATE FROM TO	TIME OF DAY	DEPTH FEET	00665 PHOS-TOT MG/L P	32217 CHLRPHYL A UG/L
73/03/12	12 15	0000	0.033	5.6
	12 15	0004	0.032	
73/09/04	15 00	0000	0.030	14.5
73/11/06	15 45	0000	0.056	3.9
	15 45	0005	0.059	

K VALUE KNOWN TO BE
LESS THAN INDICATED

APPENDIX E

TRIBUTARY AND WASTEWATER TREATMENT PLANT DATA

STORET RETRIEVAL DATE 75/08/25

122181
27 26 30.0 081 18 00.0
ARBUCKLE
12 7.5 LORIDA
T/LAKE ISTOKPOGA
ST HWY 700 BRDG SE OF SEBRING AIR TRMNL
11EPALES 2111204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/18	10 00		0.050	1.280	0.072	0.047	0.080
73/04/13	08 30		0.014	1.180	0.046	0.036	0.055
73/05/17	09 05		0.026	0.840	0.270	0.029	0.045
73/06/14	09 25		0.032	0.950	0.046	0.027	0.040
73/07/13	08 30		0.035	1.050	0.074	0.056	0.067
73/08/17	08 35		0.019	1.050	0.044	0.058	0.070
73/09/14	09 10		0.013	1.100	0.044	0.086	0.113
73/10/12	09 15		0.032	1.000	0.060	0.058	0.095
73/11/16	09 30		0.280	0.900	0.076	0.028	0.055
73/12/14	10 10		0.400	0.700	0.040	0.016	0.030
74/01/17	09 20		0.320	0.700	0.090	0.044	0.050
74/02/14	08 50		0.240	0.700	0.025	0.015	0.025

STORET RETRIEVAL DATE 75/08/25

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 122101
27 23 00.0 081 12 00.0
ISTOKPOGA CANAL
12       7.5 BASINGER NW
O/LAKE ISTOKPOGA
BRDG AT NE EDGE OF LAKE
11EPALES                    2111204
4                           0000 FEET  DEPTH
```

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P
73/03/18	10 30		0.029	1.600	0.110	0.050	0.085
73/04/13	08 55		0.042	1.700	0.052	0.050	0.075
73/05/17	08 45		0.010K	1.700	0.042	0.035	0.075
73/06/14	09 05		0.021	1.100	0.028	0.017	0.055
73/07/13	08 10		0.013	1.680	0.060	0.230	0.280
73/08/17	08 25		0.024	1.900	0.120	0.036	0.052
73/09/14	08 55		0.010K	0.990	0.037	0.061	0.095
73/10/12	09 00		0.021	2.000	0.210	0.430	0.660
73/11/16	09 15		0.048	0.875	0.040	0.040	0.082
73/12/14	10 30		0.072	0.700	0.040	0.040	0.060
74/01/17	09 00		0.080	0.900	0.075	0.044	0.065
74/02/14	08 30		0.052	0.800	0.030	0.020	0.045

K VALUE KNOWN TO BE
LESS THAN INDICATED

STORET RETRIEVAL DATE 75/08/25

12218A TF12218A P000450*
27 30 00.0 081 26 30.0
SEBRING
12117 1-250000 FT PIER
O/LAKE ISTOKPOGA
LAKE ISTOKPOGA
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/02/28	11 00								
CP(T)-			4.900	12.300	3.100	0.082	0.390	0.140	0.138
73/02/28	16 00								
73/03/30	11 00								
CP(T)-			2.400	27.300	13.300	0.650	0.940		
73/03/30	16 00								
73/04/30	11 00								
CP(T)-			3.300	13.200	3.800	0.130	0.440		
73/04/30	16 00								
73/05/31	11 00								
CP(T)-			3.000	16.000	3.900	0.155	0.330		
73/05/31	16 00								
73/06/29	11 00								
CP(T)-			0.315	26.000	12.100	0.130	0.680		
73/06/29	16 00								
73/07/31	11 00								
CP(T)-			0.540	16.800	7.200		0.548	0.085	0.076
73/07/31	16 00								
73/08/31	11 00								
CP(T)-				21.000	9.000	0.115	0.440	0.082	0.071
73/08/31	16 00								
73/10/02	11 00								
CP(T)-			1.500	8.700	5.000	0.049	0.078	0.087	0.091
73/10/02	16 00								
73/11/02	11 00								
CP(T)-			5.100	7.600	1.200	0.220	0.250	0.065	0.059
73/11/02	16 00								
73/11/28	11 00								
CP(T)-			4.800	9.400	2.400	0.086	0.120	0.053	0.035
73/11/28	16 00								
74/01/03	11 00								
CP(T)-			6.600	12.000	2.520	0.250	0.450	0.041	0.038
74/01/03	16 00								
74/01/28	08 00								
CP(T)-			0.760	25.000	13.200	0.490	0.910	0.031	0.043

STORET RETRIEVAL DATE 75/08/25

12218A TF1221BA P000450*
27 30 00.0 081 26 30.0
SEBRING
12117 1-250000 FT PIER
D/LAKE ISTOKPOGA
LAKE ISTOKPOGA
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
74/02/27	11 00		0.680	23.000	8.600	0.150		0.080	0.052

STORET RETRIEVAL DATE 75/08/25

122188 AS122188 P002500
27 27 40.0 081 21 10.0
SEBRING
12 7.5 LORIDA
T/LK ISTOKPOGA
ARBUCKLE CREEK
11EPALES 2141204
4 0000 FEET DEPTH

DATE FROM TO	TIME OF DAY	DEPTH FEET	00630 NO2&NO3 N-TOTAL MG/L	00625 TOT KJEL N MG/L	00610 NH3-N TOTAL MG/L	00671 PHOS-DIS ORTHO MG/L P	00665 PHOS-TOT MG/L P	50051 FLOW RATE INST MGD	50053 CONDUIT FLOW-MGD MONTHLY
73/04/30	11 00								
CP(T)-			0.440	14.000	1.400	7.700	9.000	0.125	0.135
73/04/30	16 00								
73/05/31	11 00								
CP(T)-			0.550	11.500	1.680	9.000	10.000	0.158	0.135
73/05/31	16 00								
73/06/29	11 00								
CP(T)-			0.165	9.800	0.570	4.800	9.100	0.123	0.114
73/06/29	16 00								
73/07/31	11 00								
CP(T)-			0.660	4.000	0.250	5.200	6.600	0.191	0.185
73/07/31	16 00								
73/08/31	11 00								
CP(T)-				4.500	0.250	6.400	7.230	0.238	0.213
73/08/31	16 00								
73/10/02	11 00								
CP(T)-			0.900	7.800	0.120	7.800	8.100	0.225	0.218
73/10/02	16 00								
73/10/31	11 00								
CP(T)-			3.780	5.100	0.140	7.500	8.700	0.218	0.214
73/10/31	16 00								
73/11/30	11 00								
CP(T)-			1.800	8.500	0.920	8.700	9.100	0.213	0.206
73/11/30	16 00								
74/01/03	11 00								
CP(T)-			3.200	9.400	0.510	11.600	14.000	0.190	0.218
74/01/03	16 00								
74/01/28	08 00								
CP(T)-			4.500	4.500	1.760	10.000	10.000	0.246	0.181
74/01/28	20 00								
74/02/27	11 00								
CP(T)-			14.300	11.000	4.900	8.300	9.900	0.273	0.258
74/02/27	16 00								
74/04/02	11 00		11.000	6.700	1.500	8.000	9.100	0.248	0.265